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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,273	11/19/2003	Jun Wan	05-03-005	7403

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EXAMINER

PALADINI, ALBERT WILLIAM

ART UNIT PAPER NUMBER

2125

DATE MAILED: 07/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/717,273	Applicant(s) WAN ET AL.	
	Examiner Albert W. Paladini	Art Unit 2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/19/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to figure 6, lines 2-6 on page 11 state "Guided by the face normal at a point projected from a point on the surface element 605 and the topology of the tetrahedral elements in the mesh, the thickness pair 2D surface elements 605 and 610 are found within the shortest path 620." In figure 6, surface 605 is parallel to surface 610. Then, a projection from a normal to surface 605 traverses the solid at an angle of zero degrees, and line 615 determined the thickness of the solid. If, however, surface 605 were not parallel to the opposite surface with element 610, then a projection from a normal to surface 605 would traverse the solid at an angle other than zero degrees, and the projected line would not measure the thickness of the solid. For an irregularly shaped solid, selecting a normal to an arbitrary element as a basis for determining thickness would result in multiple thickness values based upon the angle of the element selected. This portion of the specification provides the basis for "traversing the internal

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topology” as recited in claim 1, “projecting the second element” in claims 9, 19, 26, and “traversing the internal body topology” in claims 11, 21.

Appropriate correction and clarification are required.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

Lines 9-13 recite, “traversing the internal body topology to identify a second element in a second wall side of the graphic model; measuring the distance between the first element and the second element”. After the first element is selected, the internal body can be traversed at varying angles. So the measured distance will depend upon the angle taken to traverse the body.

Claim 9

Lines 9-10 recite, “searching for a second element in the surface mesh of the model”. The method of searching is not defined, so that the “second element” can be anywhere in the surface mesh of the model. It can even be adjacent to the “first element” identified in the first step. This will not result in “determining the thickness of a

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wall of a graphic model". The step of "determining a face normal direction at the projected point" appears to be irrelevant, as it is not used in later steps.

Claim 11

Lines 10-14 recite, "means for traversing the internal body topology to identify a second element in a second wall side of the graphic model; means for measuring the distance between the first element and the second element". After the first element is selected, the internal body can be traversed at varying angles. So the measured distance will depend upon the angle taken to traverse the body.

Claim 19

Lines 9-10 recite, "means for searching for a second element in the surface mesh of the model". The method of searching is not defined, so that the "second element" can be anywhere in the surface mesh of the model. It can even be adjacent to the "first element" identified in the first step. This will not result in "determining the thickness of a wall of a graphic model". The step of "means for determining a face normal direction at the projected point" does not appear to be related to the other means.

Claim 21

Lines 11-15 recite, "instructions for traversing the internal body topology to identify a second element in a second wall side of the graphic model; instructions for

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measuring the distance between the first element and the second element". After the first element is selected, the internal body can be traversed at varying angles. So the measured distance will depend upon the angle taken to traverse the body.

Claim 29

Lines 10-11 recite, "instructions for searching for a second element in the surface mesh of the model". The method of searching is not defined, so that the "second element" can be anywhere in the surface mesh of the model. It can even be adjacent to the "first element" identified in the first step. This will not result in "determining the thickness of a wall of a graphic model". The step of "instructions for determining a face normal direction at the projected point" does not appear to be related to the other instructions.

Appropriate correction and clarification is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Furkay (5896303).

This rejection is made to the extent that the claims were understood in light of the 35 USC 112 rejections provided in paragraphs 1-4. The rejection was made by selecting art, which addressed the claim limitations, which were clearly recited.

Referring to figure 2, (C5, L30) to (C7, L5) discloses a method of generating a graphic model of a grid of a three dimensional object. Mesh elements are created on the region of interest. Specifically, (C5, L58) to (C6, L12), in conjunction with figures 4 and 5 disclose the system and method of measuring a distance between a first element and a second element. Figure 4 depicts a normal line in two dimensions and figure 5 depicts a normal line in three dimensions, which traversed the internal body topology and determines the thickness by measuring the distance.

Relevant Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sheehan (5601084) discloses a method for imaging and three-dimensional modeling used to determine cardiac wall thickness and motion. A mesh of triangular tiled sections is created. Figure 12 depicts triangular tiled sections produced by projecting perpendiculars from a mesh of connected triangle connecting an inner surface to triangles connecting a center surface. Areas and volumes of triangular sections are created, and the cardiac wall thickness is found by dividing the center volume by the area of the appropriate triangular section.

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Vining (6366800) discloses a computer system for displaying a three-dimensional structure and identifying regions of abnormal wall structure for use in endoscopic analysis. A wireframe model is created and wall thickness at a vertex on the wireframe model is calculated from the volume data of the selected organ, which is measured at regularly spaced intervals along each normal vector.

Kim (6484300) discloses a system and method for obtaining pattern densities of integrated circuits. The thickness of a planarization layer is obtained by using functional relationship involving CMP polishing time.

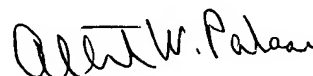
Mitsumaru (6557338) discloses a method of determining dimensions of an extruded die, where a thickness is determined by drawing an inward perpendicular from a surface element to a surface element on the opposite side.

8. Any inquiry concerning this communication or earlier communication from the examiner should be direct to Albert W. Paladini whose telephone number is (571) 272-3748. The examiner can normally be reached from 7:00 to 3:00 PM on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo P. Picard, can be reached on (571) 272-3749. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

July 25, 2006



Albert W. Paladini
Primary Examiner
Art Unit 2125